Kansas Department of Health and Environment
Syndromic Surveillance Technical Specifications for Stage 2 Meaningful Use

What is Syndromic Surveillance?

Syndromic surveillance gives public health authorities timely access to emergency department; this information is used to monitor trends in emergency departments for early event detection and enhanced awareness of patterns that can be used to improve community health. Kansas is utilizing the program BioSense 2.0 to conduct syndromic surveillance. For more details on Syndromic Surveillance (SyS) at the Kansas Department of Health & Environment (KDHE), click here: http://www.kdheks.gov/health/meaningful_use/download/SyndromicSurveillance_bcl.pdf

Certification standard

KDHE is requesting that hospitals use the PHIN Messaging Guide for Syndromic Surveillance - Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings (v.2.0) (henceforth referred to as "PHIN Messaging Guide") as a guide for implementation of their syndromic surveillance system. The guide can be accessed at this link: http://www.cdc.gov/phin/library/guides/SyndrSurvMessagGuide2_MessagingGuide_PHN.pdf

Identifiable Data

IMPORTANT NOTE: While the PHIN Messaging Guide lists stipulates some patient identifiable information as R (Required), RE (Required but may be left empty) or O (Optional), **patient identifiable data should NOT be submitted to BioSense 2.0**. This includes, but is not limited to: patient name, patient social security number, patient street address, next-of-kin information, and more.

The following HL-7 fields frequently contain identifiable data and should **NOT** be submitted to BioSense:

- PID.2.1
- PID.3.2-4
- PID.5.1-6
- PID.5.8-12
- PID.6
- PID.9
- PID.11.1-2
- PID.11.8
- Note: For PID.11, only zip code should be sent, not street address, etc.
- PID.13-17
- PID.19-21
- PID.23-28
- PID.30.2
- NK Segments
- MRG.7
- IN1.16
- IN1.19
- GT1.3-6
- GT1.12
- GT1.19

While patient street address must be null, **patient state, zip code, county code and country code are required for submission.**

Minimum data required by KDHE:

KDHE is not requiring any fields beyond those required as outlined in the PHIN Messaging Guide at this time. **All fields listed as R or RE must be submitted to meet syndromic surveillance guidelines.**

The fields on which KDHE is currently focusing for data validation and quality improvement include the following:

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
Facility Identifier (Treating)	Unique facility identifier of facility where the patient originally presented (original provider of data). Use NPI (National Provider Identifier) or OID from www.HL7.org	This ID must be approved by and submitted to the BioSense technical team prior to submission of any test or production messages. ID must appear in the header of every message or batch.	R	MSH-4.2
Facility Name (Treating)	Name of the treating facility where the patient originally presented		O	EVN-7.1 (2.5.1) OBX-5 (HD) (2.3.1)
Facility Visit/Type	Type of facility or the visit where the patient presented for treatment.		R	OBX
Report Date/Time	Date and time of report transmission from original source (from treating facility)		R	EVN-22
Visit Date/Time	Date/Time of patient presentation		R	PV1-44
Unique Patient ID[3]	Unique identifier for the patient	See below[3]	R	PID-3.1

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
Medical Record #	Patient medical record number	This field this must NOT be a patient's social security number and may be the same as the patient ID.	O	PID-3.1
Unique Visiting ID[4]	Unique identifier for a patient visit	A visit is defined as a discrete or unique clinical encounter within a service department or location. Notes: Every visit will generate a record.	R	PV1-19
Age	Numeric value of patient age at time of visit	OBX-3 uses a LOINC observation identifier (specified in the value set: 2.16.840.1.114222.4.11.3589 PHVS_ObservationIdentifier_SyndromicSurveillance) 21612-7 Age – Reported (LOINC)	R	OBX-5 alt: DoB PID-7
Age Units	Unit corresponding to numeric value of patient age (e.g., Days, Month or Years)	OBX-6 Units uses UCUM or Null Flavor as the following: 2.16.840.1.114222.4.11.3402 PHVS_AgeUnit_SyndromicSurveillance	R	OBX-6
Gender	Gender of patient	Use HL7 administrative sex codes as the following: 2.16.840.1.114222.4.11.3403 PHVS_Gender_SyndromicSurveillance	RE*	PID-8
City/Town	City/Town of patient residence		RE*	PID-11.3
Zip Code[4]	Zip Code of patient home address	See below[4]	RE*	PID-11.5
State	State of patient home address	Field must be formatted as a 5-digit FIPS code and valid state codes for ALL state in the US must be included. Use the following code value set for state FIPS codes: 2.16.840.1.114222.4.11.830 PHVS_State_FIPS_5-2	RE*	PID-11.4

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
County	County of residence for patient	Field must be formatted as a 5-digit FIPS code and valid county codes for ALL counties in the US must be included. Use the following county FIPS code value set: 2.16.840.1.114222.4.11.829 PHVS_County_FIPS_6-4	RE*	PID-11.9
Country	Country of patient home address	Valid codes for ALL countries must be included. Use the following code value set: 2.16.840.1.114222.4.11.828 PHVS_Country_ISO_3166-1	RE*	PID-11.6
Race	Race of patient	Use CDC Race & Ethnicity codes as the following: 2.16.840.1.114222.4.11.836/PHVS_RaceCategory_CDC	RE*	PID-10
Ethnicity	Ethnicity of patient	Use CDC Race & Ethnicity codes as the following: 2.16.840.1.114222.4.11.837 PHVS_EthnicityGroup_CDC	RE*	PID-22
Date of onset	Date that patient began having symptoms of condition being		O	OBX-5.1
Patient class	Patient classification within facility	Data should be limited to emergency room/department patients only; limit to E=Emergency. Use HL7 Patients Class codes as the following: 2.16.840.1.114222.4.11.3404 PHVS_PatientClass_SyndromicSurveillance	RE*	PV1-2.1
Chief Complaint/ Reason for visit[5]	Short description of the chief complaint or reason for patient's visit, recorded when seeking care	See additional notes below[5]	RE*	OBX-5

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
Triage Notes	Triage notes for the patient visit	**Though this field is optional, it is highly recommended, as this field often contains more nuanced information regarding the patient's visit; travel history is often also included in this field).** OBX-3 uses a LOINC observation identifier (specified in the value set: 2.16.840.1.114222.4.11.3589 PHVS_ObservationIdentifier_SyndromicSurveillance) 54094-8 Emergency department Triage note (LOINC) For OBX-5 use: Free text. For further guidance refer to column 'Recommended HL7 Location' in the PHIN Messaging Guide.	O*	OBX-5
Diagnosis/External Cause of Injury Code[6]	Diagnosis code or external cause of injury code (for injury-related-visits) of patient condition	See additional notes below[6]	RE*	DG1-3
Clinical Impression	Clinical Impression (free text) of diagnosis		O	OBX-5
Diagnosis Type	Qualifier for Diagnosis/Injury Code specifying type of diagnosis	Use the following HL7 Diagnosis Type codes: 2.16.840.1.114222.4.11.827 PHVS_DiagnosisType_HL7_2x	RE	DG1-6
Discharge Disposition	Patient's anticipated location or status following ED visit (i.e., discharged to home, inpatient, expired, etc.)	Uses National Uniform Billing Committee (NUBC) – Patient Status (UB04 -Field 17 Codes): 2.16.840.1.114222.4.11.915 PHVS_DischargeDisposition_HL7_2x	RE*	PV1-36
Disposition Date/Time	Date and time of disposition/discharge		RE	PV1-45

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
Initial Temperature	1st recorded temperature	OBX-3 uses a LOINC observation identifier (specified in the value set: 2.16.840.1.113883.3.88.12.80.62 PHVS_VitalSignResult_HITSP) 11289-6 Body Temperature:Temp:Enctrfirst:Patient:Qn (LOINC)	O	OBX-5
Initial Temperature Units	Units corresponding to 1st recorded temperature (e.g., Fahrenheit, Celsius)	OBX-6 uses the following UCUM - Unified Codes for Units of Measure: 2.16.840.1.114222.4.11.920 PHVS_BloodPressureUnit_UCUM	CE	OBX-6
Initial Pulse Oximetry	1st recorded pulse oximetry value	OBX-3 uses a LOINC observation identifier (specified in the value set: 2.16.840.1.114222.4.11.3589 PHVS_ObservationIdentifier_SyndromicSurveillance) 59408-5 Oxygen saturation in Arterial blood by Pulse oximetry (LOINC)	O	OBX-5
Initial Pulse Oximetry Units	Units for 1st recorded pulse oximetry value	OBX-6 uses a single Unit of Measure value from UCUM: 2.16.840.1.114222.4.11.3590 PHVS_PulseOximetryUnit_UCUM	CE	OBX-6
Initial Blood Pressure	1st recorded blood pressure (SBP/DPB)	OBX-3 uses a LOINC observation identifier (specified in the value set: 2.16.840.1.113883.3.88.12.80.62 PHVS_VitalSignResult_HITSP) 8480-6 Systolic blood pressure (LOINC) and 8462-4 Diastolic blood pressure (LOINC)	O	OBX-6
Initial Blood Pressure Units	Units for 1st recorded blood pressure	OBX-6 uses the following UCUM - Unified Codes for Units of Measure: 2.16.840.1.114222.4.11.920 PHVS_BloodPressureUnit_UCUM	CE	OBX-6
Insurance Coverage	High-level description of insurance, such as Medicare, Medicaid, Private Insurance and Self-pay	For IN1-15 Insurance Plan ID, use Source of Payment Typology (PHDSC) 2.16.840.1.114222.4.11.3591	O	INI-15

Data Element Name	Description of Field	Additional Implementation Notes/ Value Set	Usage1, 2	HL7 Location
Patient Death Indicator	This field indicates whether the patient is deceased.	Conformance Statement SS-037: If valued, PID-30 (Patient Death Indicator) SHALL be valued to the Literal Value 'Y'. Condition Predicate: If PV1-36 (Discharge Disposition) is valued with any of the following: '20', '40', '41', '42' and PID-29 (Patient Death and Time) SHALL be populated.	C	PID-30
Patient Death Date/Time	The date and time at which the patient death occurred. This field shall not be populated on an admission message	Conformance Statement SS-036: If valued, PID-29 (Patient Death and Time), SHALL be expressed with a minimum precision of the nearest minute and be represented in the following format: 'YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]' Condition Predicate: If valued, PID-30 (Patient Death Indicator) SHALL be valued to the Literal Value 'Y'. Condition Predicate: If PV1-36 is valued with any of the following: '20', '40', '41', '42' then PID-29 (Patient Death and Time) SHALL be populated.	CE	PID-29

[1]**Usage defined**
R = Required & field must contain a value; A value must be present in order for the message to be accepted
RE = Required but field can be empty. **If the Sender has data, the data must be sent.** However, if there is no data captured in the field due to the setting (e.g. no chief compliant data for a trauma patient) and the field is blank, the message may be sent with the field containing no data.
RE* = This value is critical for Public Health Syndromic Surveillance and is considered REQUIRED.
O = Optional
O* = Though this field is optional, it is highly recommended, as this field often contains more nuanced information regarding the patient's visit; travel history is often also included in this field)
C = Conditional. If field evaluates to 'TRUE', then considered the same at 'R'; otherwise, Senders must not populate the field.
CE = Conditionality empty. If associated field is empty, Sender should not populate this field.

(List continues on next page)

[2]**PHIN Messaging Guide for syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings.** ADT messages A01, A03, A04 and A08 HL7 Version 2.5.1 (version 2.3.1 Compatible). Centers for Disease Control and Prevention. Release 2.0. September, 2014.

[3]**Unique Patient ID**: It is recommended that data providers submit the patient medical record number to facilitate identification of the patient, in the event of a required follow-up investigation. Unique Patient Identifier should be used that will allow the matching and linking of a patient's records across multiple encounters; it **must NOT be a patient's social security number**, but may be the same as the Medical Record Number. Patient ID is **g**enerated from the first received from the list of the following HL7 Components: PID.2.1, PID.3.1, PID.4.1, PID.18.1, and PV1.19.1 PATIENT ID MUST BE IN THE SAME ORDER IN EVERY RECORD; BioSense will only utilize the first PID to tag the record.

[4]**Zip Code**: Valid zip codes for ALL zip codes in the US must be included. Provide a minimum of 5 digits for domestic ZIP codes. Foreign postal codes should be supported.

[5]**Chief Complaint/Reason for Visit**: This field is the patient's self-reported chief complaint or reason for visit. It should be distinct from the diagnosis code which based on provider's assessment for the visit. Free text is the preferred value set. If the chief complaint is only available from drop down list fields, then concatenate all drop-down list chief complaints. The chief complaint text should NOT be replaced either manually or by the system. Keep the chief complaint the same as how it was captured at admission. **Chief complaint fields are text only and should not contain ICD-9 or ICD-10 codes.**

For Chief Complaint OBX-3 Use: 8661-1 Chief complaint – Reported (LOINC)
For Chief Complaint OBX-5 Use: Free text

[6]**Diagnosis / External source of injury code:** ICD-9 code (preferred). This field is the provider's assessment of why the patient visit occurred. It can be associated with the admitting, working or final diagnosis type. This should be distinct from the self-reported chief complaint/reason for visit from the patient.

Refer to the PHIN Messaging Guide for Syndromic Surveillance for additional details as to how these fields should be populated.

Optional Data

KDHE will gladly accept any optional data a facility is willing to share.

Refer to the PHIN Messaging Guide for Syndromic Surveillance for details as to how these fields should be populated.

Absolute minimum fields needed to create a record in BioSense 2.0

- Sending Facility Namespace Identifier (Found in HL7 Component: MSH.4.2)
    - Please note: It is vital to inform KDHE if this identifier is ever changed! A change in these fields without proper warning will result in BioSense rejecting any data transmitted for syndromic surveillance
- Admit Date/Time (Found in HL7 Component: PV1.44.1)
- Message Type (Found in HL7 Component: MSH.9.1)
- Patient Identifier (Found in either HL7 Component: PID.2.1, PID.3.1, PID.4.1, PID.18.1, PV1.19.1)
    - Note: PID MUST BE IN THE SAME ORDER IN EVERY RECORD; BioSense will only utilize the first PID to tag the record

Pre-testing – Validating HL7 Messages

Use the NIST file validation tool to validate your Syndromic Surveillance file format:

- NIST Validation Tool: http://hl7v2-ss-testing.nist.gov/mu-syndromic/
- Select "Context-free Validation"
- Select the correct profile from the attached HL7 message (A01, A03, A04 or A08)
- Select "Refresh" yields

Please be sure to validate your own messages before proceeding to the next onboarding stage. Refer to the PHIN Messaging Guide for Syndromic Surveillance for details as to how HL7 messages should be formatted. Contact Farah Naz (fnaz@kdheks.gov) to validate test messages with a KDHE representative.

ICD-9 or ICD-10

BioSense accepts ICD-9 messages and will continue to utilize ICD-9 codes in the upcoming fiscal year.

Which ED department message to send

- ADT message types A01, A04, A03, and A08 (corresponding to patient admission, registration, discharge, and updates) are used in the reporting of syndromic surveillance data.
- Only messages related to CURRENT visits should be sent.
- It is preferred that all information regarding a patient encounter be submitted within 14 days of the visit date.
- All relevant data fields related to a patient visit should be sent in each message (NOT just the updated fields). For example, if the chief complaint field is reported during the visit, but diagnosis codes are not reported until the next day, the chief complaint field should also be sent in the same message with the diagnosis codes.

Accepted Message Types

If reporting directly to BioSense 2.0: HL7 (preferred message type), CSV, flat file
If reporting to BioSense 2.0 through KHIN: HL7

Accepted Transport Type

If reporting directly to BioSense 2.0: sFTP (preferred transport type), HTTPS, Mirth, PHIN MS
If reporting to BioSense 2.0 through KHIN: VPN

Batch or Continuous Transmission

Facilities reporting directly to BioSense 2.0 must submit data in batches; a batch of records can be sent as often as once every hour. However, each batch must be accompanied by an MSH header. Messages must be transmitted at the time of patient encounter or within 24 hours.

Facilities reporting to BioSense 2.0 via KHIN can submit data continuously (real-time) or in batches. A batch header will be generated by KHIN for transmission to BioSense 2.0. Messages must be transmitted at the time of patient encounter or within 24 hours.